AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

Claims 9 and 12-15 are canceled without prejudice or disclaimer.

Claims 16-33 are newly added.

Listing of Claims:

1. (Original) A method to manage addresses in a network, comprising:

when connecting a mobile router (MR) of a mobile network (MONET) to an access point (AP) of an access network (AN) that includes an Access Router (AR), sending a first neighbor advertisement from a mobile network node (MNN), the first neighbor advertisement comprising a care of address (CoA) and a link layer address (LLA) of the MNN within the MONET;

based on the first neighbor advertisement, constructing a first neighbor cache in the MR that associates the CoA with the LLA;

sending a second neighbor advertisement from the MR to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and a LLA of the MR (LLA_MR); and

based on the second neighbor advertisement, constructing a second neighbor cache in the AR that associates the CoA with the LLA_MR.

2. (Original) A method as in claim 1, further comprising:

in response to an arrival of a downlink packet at the AR having a CoA in a destination address field, checking the second neighbor cache using the CoA to obtain the associated LLA_MR of

the MR;

transmitting the packet to the MR using the LLA_MR in a link layer destination address field;

in response to the arrival of the packet at the MR, checking the first neighbor cache using the CoA in an IP layer destination address field to obtain the associated LLA of the MNN; and

transmitting the packet to the MNN using the obtained LLA in the link layer destination address field.

3. (Original) A method to manage addresses in a network, comprising:

when connecting a mobile router (MR) of a mobile network (MONET) to an access point (AP) of an access network (AN) that includes an Access Router (AR), sending a first neighbor advertisement from a mobile network node (MNN), the first neighbor advertisement comprising a care of address (CoA) and a link layer address (LLA) of the MNN within the MONET;

based on the first neighbor advertisement, constructing a first neighbor cache in the MR that associates the CoA with the LLA, and constructing a mapping table that associates the CoA with one of a set of LLAs of the MR (LLA_MRi);

sending a second neighbor advertisement from the MR to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the LLA_MRi; and

based on the second neighbor advertisement, constructing a second neighbor cache in the AR that associates the CoA with the LLA_MRi.

4. (Original) A method as in claim 3, further comprising:

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in response to an arrival of a downlink packet at the AR having a CoA in a destination address field, checking the second neighbor cache using the CoA to obtain the associated LLA_MRi of the MR;

transmitting the packet to the MR using the LLA_MRi in a link layer destination address field;

in response to the arrival of the packet at the MR, checking the mapping table using the LLA_MRi in the link layer destination address field to obtain the associated CoA;

checking the first neighbor cache using the CoA obtained from the mapping table to obtain the associated LLA of the MNN; and

transmitting the packet to the MNN using the obtained LLA in the link layer destination address field.

5. (Original) A method to manage addresses in a network, comprising:

when connecting a mobile router (MR) of a mobile network (MONET) to an access point (AP) of an access network (AN) that includes an Access Router (AR), sending a first neighbor advertisement from a mobile network node (MNN), the first neighbor advertisement comprising a care of address (CoA) and a link layer address (LLA) of the MNN within the MONET;

based on the first neighbor advertisement, constructing a mapping table in the MR that associates the LLA of the MNN with one of a set of LLAs of the MR (LLA_MRi);

sending a second neighbor advertisement from the MR to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the LLA_MRi; and

based on the second neighbor advertisement, constructing a neighbor cache in the AR that

associates the CoA with the LLA_MRi.

6. (Original) A method as in claim 5, further comprising:

in response to an arrival of a downlink packet at the AR having a CoA in a destination address field, checking the neighbor cache using the CoA to obtain the associated LLA_MRi of the MR;

transmitting the packet to the MR using the LLA_MRi in a link layer destination address field;

in response to the arrival of the packet at the MR, checking the mapping table using the LLA_MRi in the link layer destination address field to obtain the associated LLA of the MNN; and

transmitting the packet to the MNN using the obtained LLA in the link layer destination address field.

7. (Currently Amended) A system to manage addresses in a network, comprising a mobile network (MONET) having a mobile router (MR) and at least one Mobile Network Node (MNN), said Monet being connectable via the MR to an access point (AP) of an access network (AN) that comprises an Access Router (AR), said system comprising data processors that operate in accordance with stored programs, where a data processor of the MNN is responsive to the MR connecting to the AP to send a first neighbor advertisement that comprises a care of address (CoA) and a link layer address (LLA) of the MNN within the MONET; where a data processor of the MR, responsive to the first neighbor advertisement, constructs a first neighbor cache that associates the CoA with the LLA and sends a second neighbor advertisement from the MR to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and a LLA of the MR (LLA_MR); and where a data processor of the AR, responsive to the second neighbor advertisement, constructs a second neighbor cache that associates the CoA with the LLA_MR.

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8. (Original) A system as in claim 7, where said AR data processor is further responsive to an arrival of a downlink packet at the AR having a CoA in a destination address field to check the second neighbor cache using the CoA to obtain the associated LLA_MR of the MR and to transmit the packet to the MR using the LLA_MR in a link layer destination address field; where said MR data processor is further responsive to the arrival of the packet at the MR to check the first neighbor cache using the CoA in an IP layer destination address field to obtain the associated LLA of the MNN to transmit the packet to the MNN using the obtained LLA in the link layer destination address field.

9. (Canceled)

10. (Currently Amended) A system to manage addresses in a network, comprising a mobile network (MONET) having a mobile router (MR) and at least one Mobile Network Node (MNN), said Monet being connectable via the MR to an access point (AP) of an access network (AN) that comprises an Access Router (AR), said system comprising data processors that operate in accordance with stored programs, where a data processor of the MNN is responsive to the MR connecting to the AP to send a first neighbor advertisement that comprises a care of address (CoA) and a link layer address (LLA) of the MNN within the MONET; where a data processor of the MR, responsive to the first neighbor advertisement, constructs a first neighbor cache that associates the CoA with the LLA and constructs a mapping table that associates the CoA with one of a set of LLAs of the MR (LLA_MRi) and sends a second neighbor advertisement from the MR to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the LLA_MRi; and where a data processor of the AR, responsive to the second neighbor advertisement, constructs a second neighbor cache that associates the CoA with the LLA_MRi.

11. (Original) A system as in claim 10, where said AR data processor is further responsive to an arrival of a downlink packet at the AR having a CoA in a destination address field to check the second neighbor cache using the CoA to obtain the associated LLA_MRi of the MR and to transmit the packet to the MR using the LLA_MRi in a link layer destination address field; where

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said MR data processor is further responsive to the arrival of the packet at the MR to check the mapping table using the LLA_MRi in the link layer destination address field to obtain the associated CoA, to check the first neighbor cache using the CoA obtained from the mapping table to obtain the associated LLA of the MNN and to transmit the packet to the MNN using the obtained LLA in the link layer destination address field.

12-15. (Canceled)

16. (New) A method comprising:

receiving a first neighbor advertisement from a mobile network node (MNN) within a mobile network (MONET), the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN, where the first neighbor advertisement is received by a mobile router (MR) within the MONET;

based on the received first neighbor advertisement, constructing a first neighbor cache in the MR that associates the CoA of the MNN with the LLA of the MNN; and

sending a second neighbor advertisement from the MR to an access network (AN) on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and a link layer address of the MR (LLA_MR).

17. (New) A method as in claim 16, where the LLA of the MNN and the LLA_MR comprise different types of link layer addresses.

18. (New) A method as in claim 16, where packets received by the MR for the MNN are not tunneled.

19. (New) A method as in claim 16, further comprising: receiving a packet at the MR from the AN, where the received packet includes a CoA in an internet protocol (IP) layer destination

address field; checking the first neighbor cache using the CoA in the IP layer destination address field to obtain the associated LLA of the MNN; and transmitting the packet from the MR to the MNN using the obtained LLA of the MNN in a link layer destination address field.

20. (New) A method as in claim 16, where the LLA_MR comprises one LLA of a set of LLAs assigned to the MR (LLA_MRi), the method further comprising: based on the received first neighbor advertisement, constructing a mapping table in the MR that associates the CoA of the MNN with the one LLA of the LLA_MRi.

21. (New) A method comprising:

receiving a first neighbor advertisement from a mobile network node (MNN) within a mobile network (MONET), the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN, where the first neighbor advertisement is received by a mobile router (MR) within the MONET;

based on the received first neighbor advertisement, constructing a first neighbor cache in the MR that associates the LLA of the MNN with one LLA of a set of LLAs assigned to the MR (LLA_MRi); and

sending a second neighbor advertisement from the MR to an access network (AN) on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the one LLA of the LLA_MRi.

22. (New) A method as in claim 21, where the LLA of the MNN and the LLAs of the LLA_MRi comprise different types of link layer addresses.

23. (New) A method as in claim 21, where packets received by the MR for the MNN are not tunneled.

24. (New) A method as in claim 21, further comprising: receiving a packet at the MR from the AN, where the received packet includes the one LLA of the LLA_MRi in a link layer destination address field; checking the first neighbor cache using the one LLA of the LLA_MRi to obtain the associated LLA of the MNN; and transmitting the packet from the MR to the MNN using the obtained LLA of the MNN in the link layer destination address field.

25. (New) A mobile router (MR) comprising a data processor, a connection to an access network (AN) and a connection to a mobile network node (MNN), where a mobile network (MONET) includes the MR and the MNN, where the MR is configured to receive a first neighbor advertisement from the MNN, the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN; to construct a first neighbor cache in the MR based on the received first neighbor advertisement, the first neighbor cache associating the CoA of the MNN with the LLA of the MNN; and to send a second neighbor advertisement to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and a link layer address of the MR (LLA_MR).

26. (New) A mobile router as in claim 25, where packets received by the MR for the MNN are not tunneled.

27. (New) A mobile router as in claim 25, where the MR is further configured to receive a packet from the AN, where the received packet includes a CoA in an internet protocol (IP) layer destination address field; to check the first neighbor cache using the CoA in the IP layer destination address field to obtain the associated LLA of the MNN; and to transmit the packet to the MNN using the obtained LLA of the MNN in a link layer destination address field.

28. (New) A mobile router as in claim 25, where the LLA_MR comprises one LLA of a set of LLAs assigned to the MR (LLA_MRi), where the MR is further configured, based on the received first neighbor advertisement, to construct a mapping table in the MR that associates the CoA of the MNN with the one LLA of the LLA_MRi.

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29. (New) A mobile router (MR) comprising a data processor, a connection to an access network (AN) and a connection to a mobile network node (MNN), where a mobile network (MONET) includes the MR and the MNN, where the MR is configured to receive a first neighbor advertisement from the MNN, the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN; to construct a first neighbor cache in the MR based on the received first neighbor advertisement, the first neighbor cache associating the LLA of the MNN with one LLA of a set of LLAs assigned to the MR (LLA_MRi); and to send a second neighbor advertisement to the AN on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the one LLA of the LLA_MRi.

30. (New) A mobile router as in claim 29, where packets received by the MR for the MNN are not tunneled.

31. (New) A mobile router as in claim 29, where the MR is further configured to receive a packet from the AN, where the received packet includes the one LLA of the LLA_MRi in a link layer destination address field; to check the first neighbor cache using the one LLA of the LLA_MRi to obtain the associated LLA of the MNN; and to transmit the packet to the MNN using the obtained LLA of the MNN in the link layer destination address field.

32. (New) A mobile router comprising:

means for receiving a first neighbor advertisement from a mobile network node (MNN) within a mobile network (MONET), the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN, where the MONET further includes the mobile router (MR);

means for constructing, based on the received first neighbor advertisement, a first neighbor cache in the MR that associates the CoA of the MNN with the LLA of the MNN; and

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means for sending a second neighbor advertisement to an access network (AN) on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and a link layer address of the MR (LLA_MR).

33. (New) A mobile router comprising:

means for receiving a first neighbor advertisement from a mobile network node (MNN) within a mobile network (MONET), the first neighbor advertisement comprising a care of address (CoA) of the MNN and a link layer address (LLA) of the MNN, where the MONET further includes the mobile router (MR);

means for constructing, based on the received first neighbor advertisement, a first neighbor cache in the MR that associates the LLA of the MNN with one LLA of a set of LLAs assigned to the MR (LLA_MRi); and

means for sending a second neighbor advertisement to an access network (AN) on behalf of the MNN, the second neighbor advertisement comprising a mapping between the CoA of the MNN and the one LLA of the LLA_MRi.